

FIG. 1

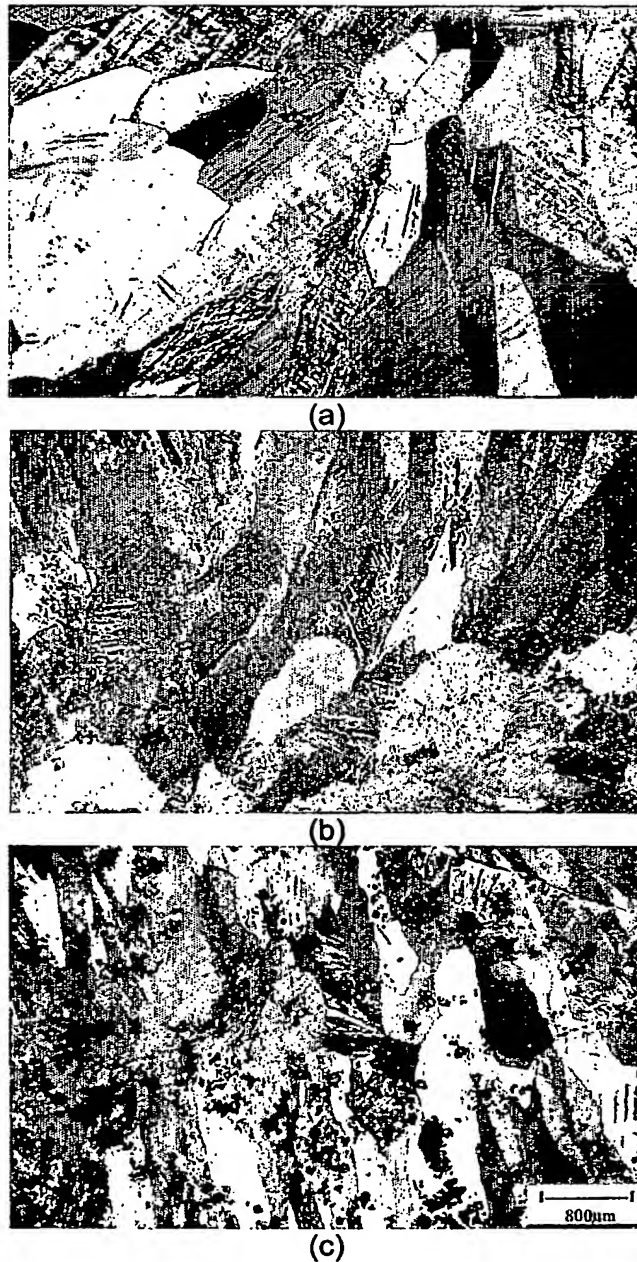


Figure 1 Optical micrographs showing the grain refining ability of as-received sponge when added to pure magnesium at 730 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1% sponge, followed by 30 minutes manual stirring, and (c) adding a further 1% sponge and applying 30 minutes manual stirring.

BEST AVAILABLE COPY

FIG 2

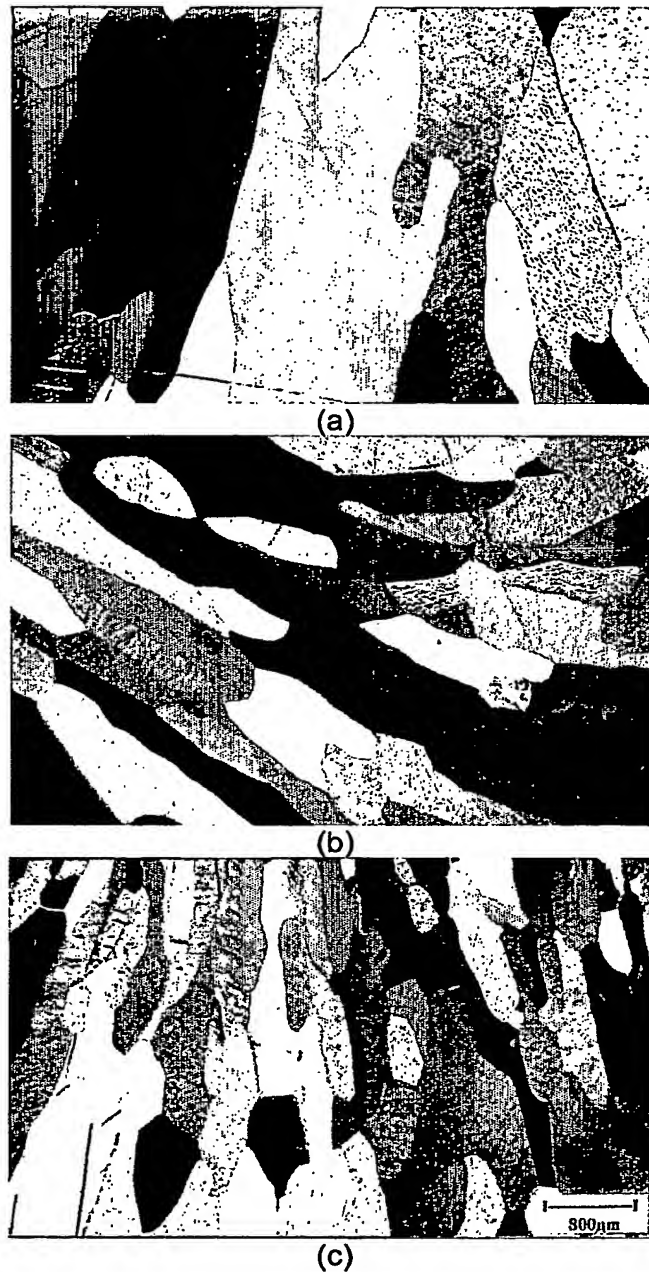


Figure 2 Optical micrographs showing the grain refining ability of as-received sponge when added to pure magnesium at 780 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1% sponge, followed by two minutes manual stirring and then 30 minutes holding at temperature, and (c) a further holding of 210 minutes at temperature.

FIG 3

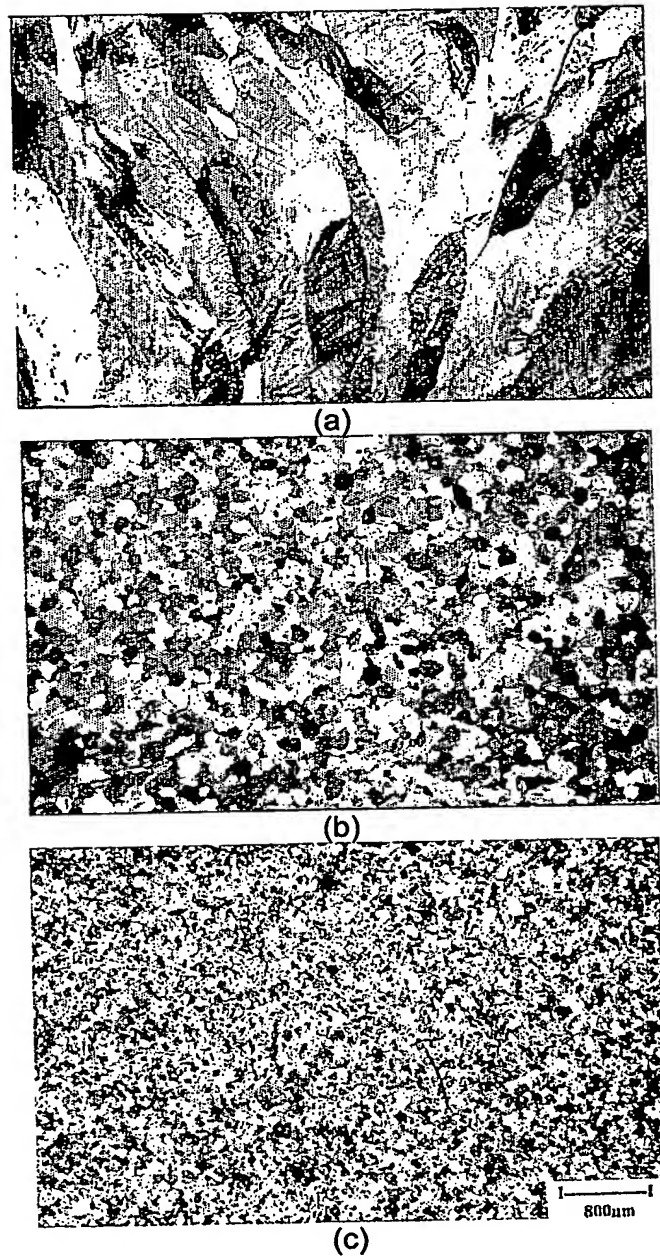


Figure 3 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 680 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 20 minutes manual stirring, and (c) after a further 10 minutes stirring.

FIG 4

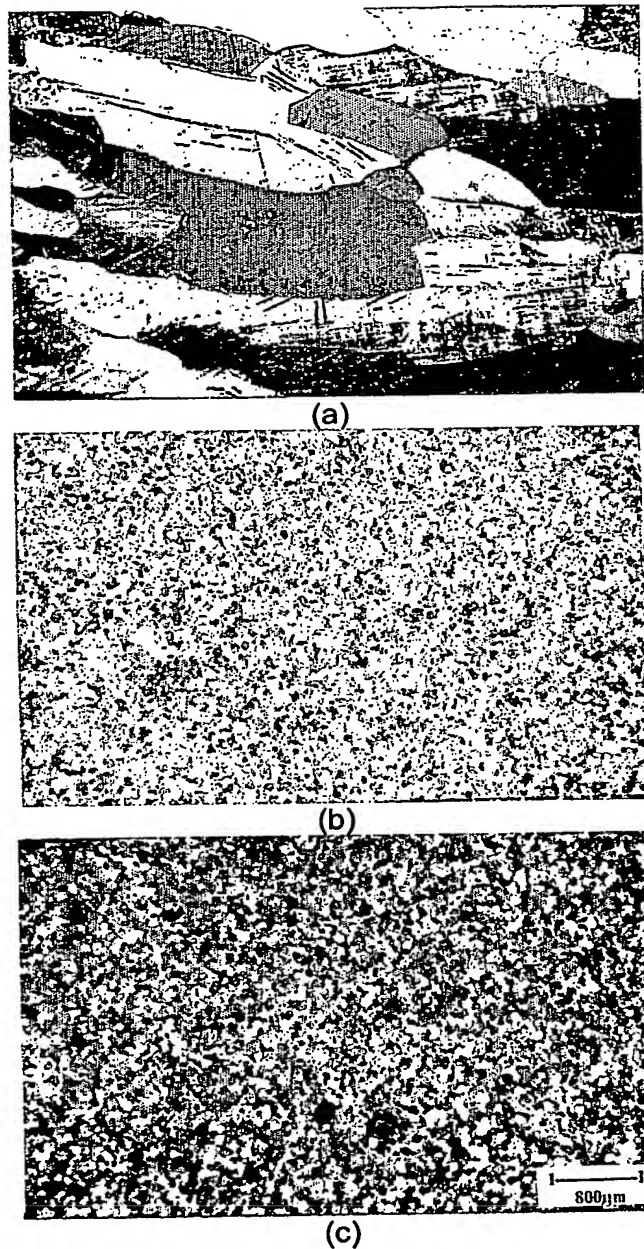


Figure 4 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 730 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 30 minutes manual stirring, and (c) after 30 minutes of holding following (b) and then restirring the melt for two minutes.

FIG 5

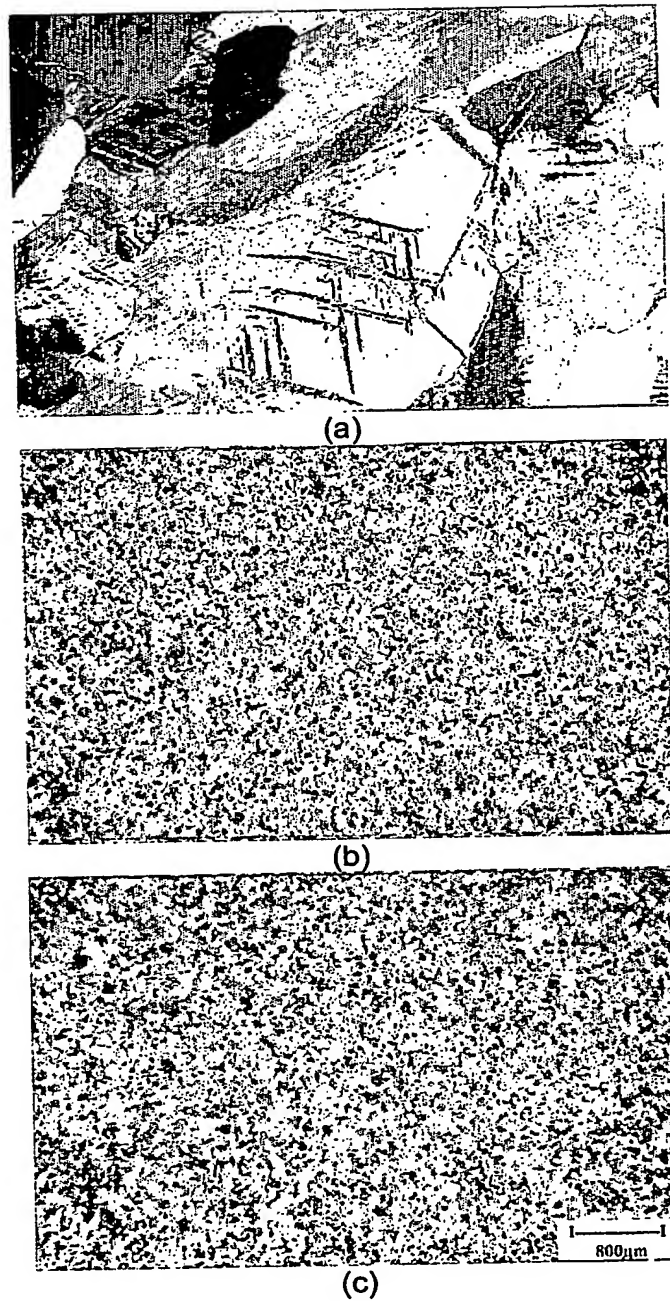
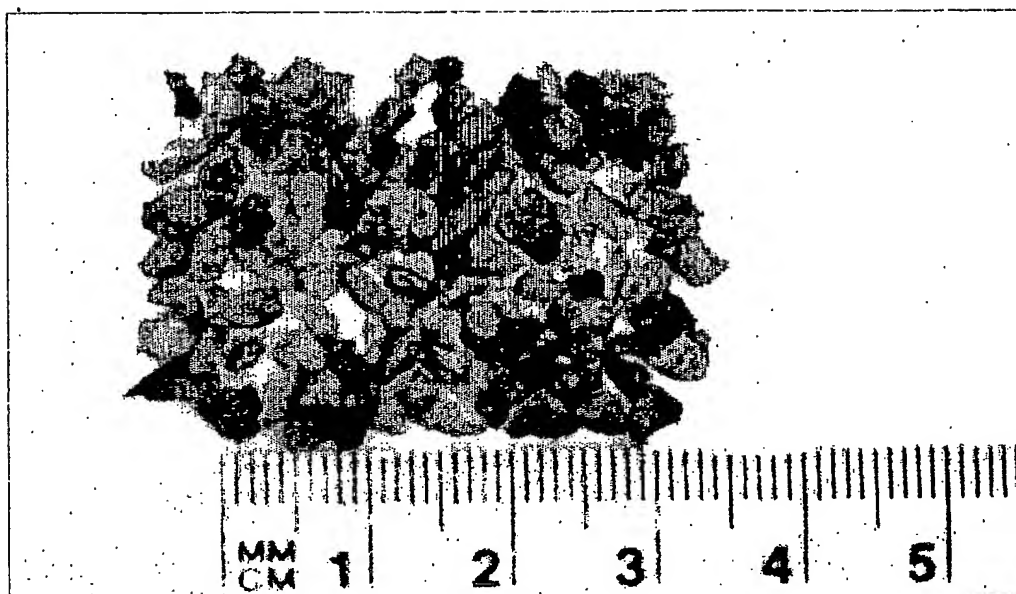
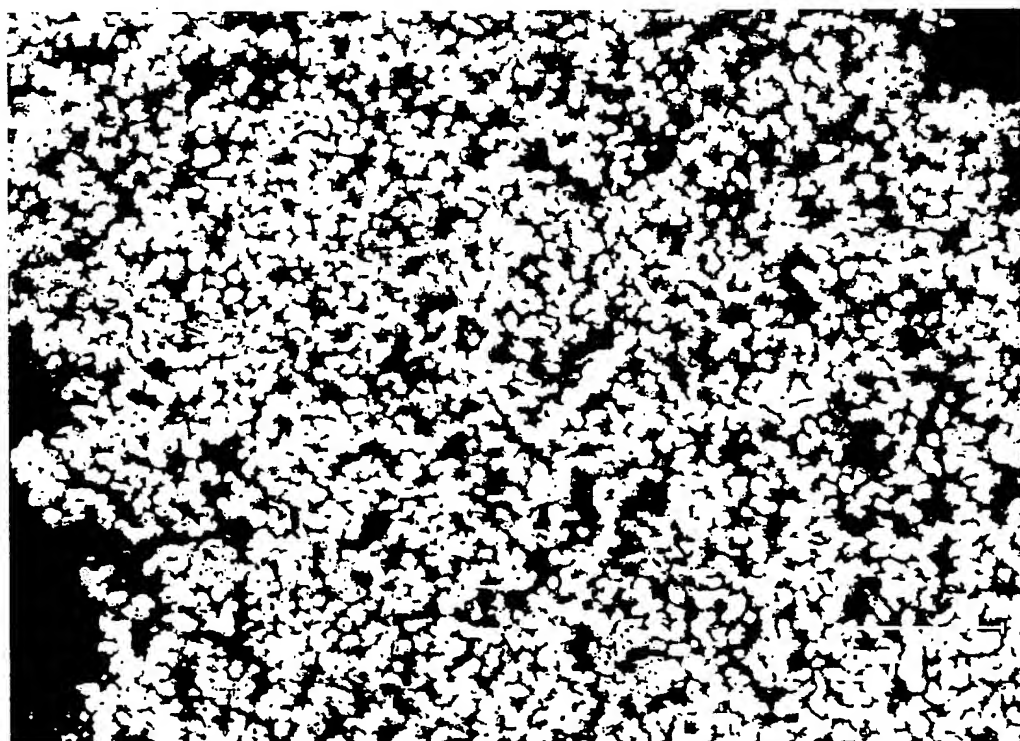


Figure 5 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 800 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 30 minutes manual stirring, and (c) after 30 minutes of holding following (b) and then restirring the melt for two minutes.

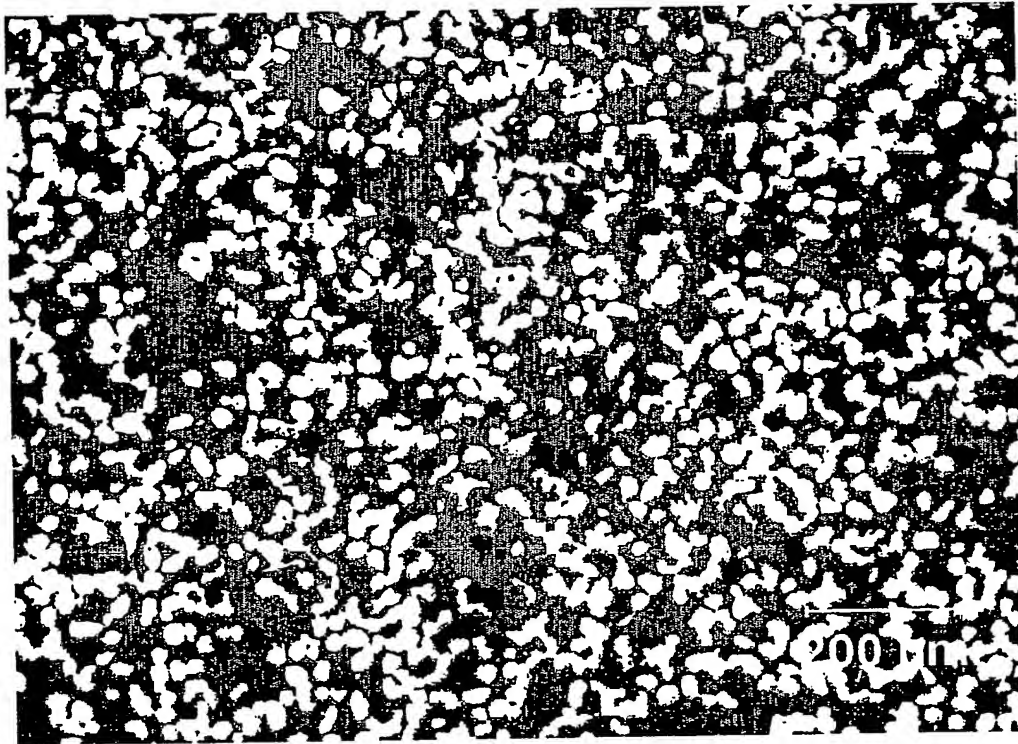


**Fig. 6**

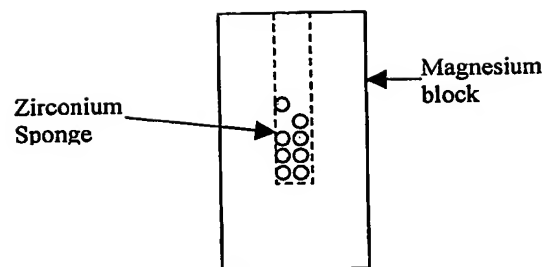


**Fig. 7**

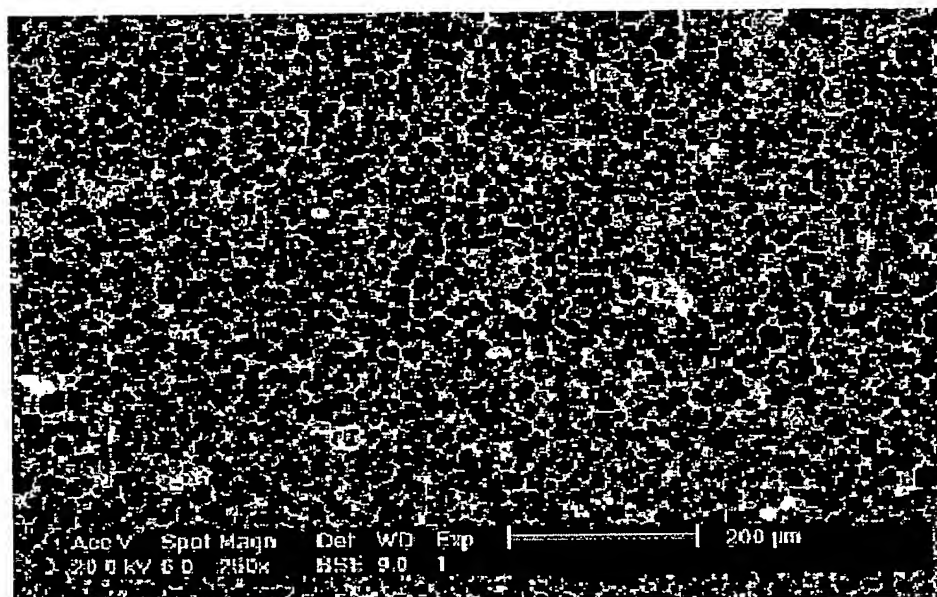
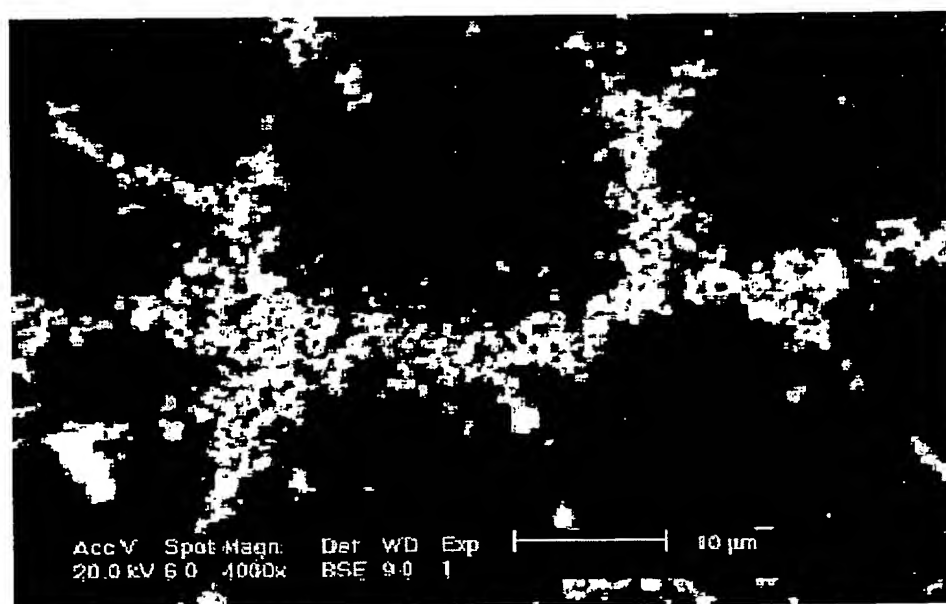




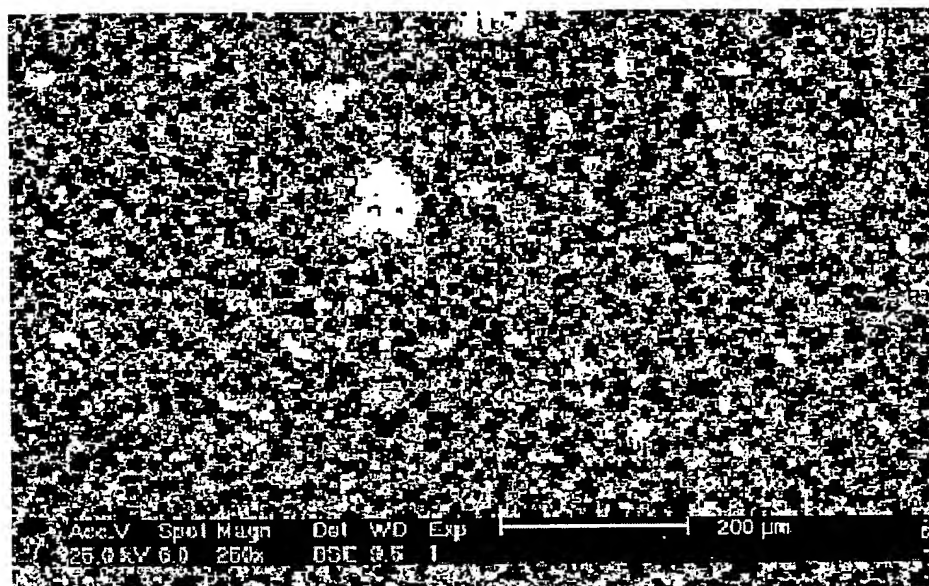
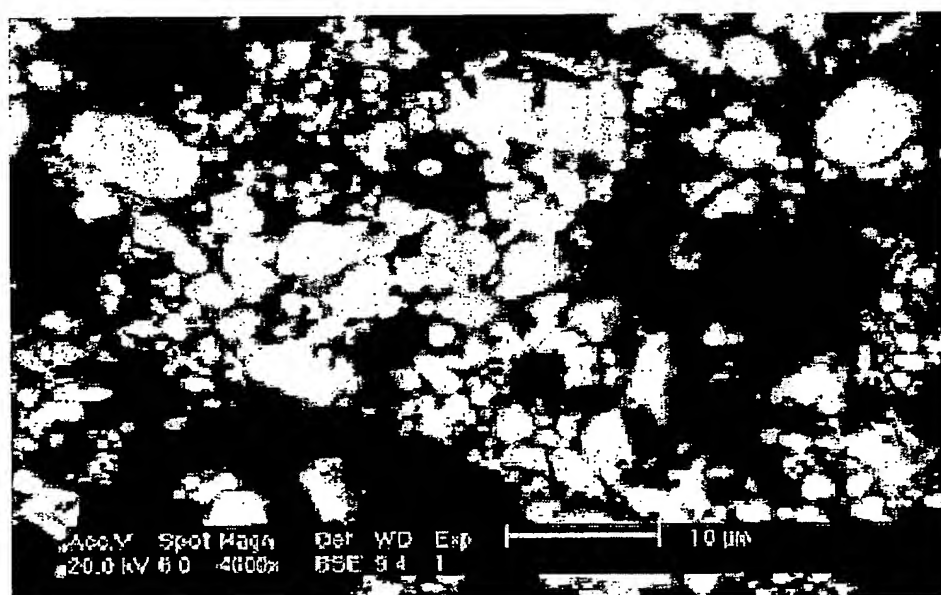
**Fig. 8**

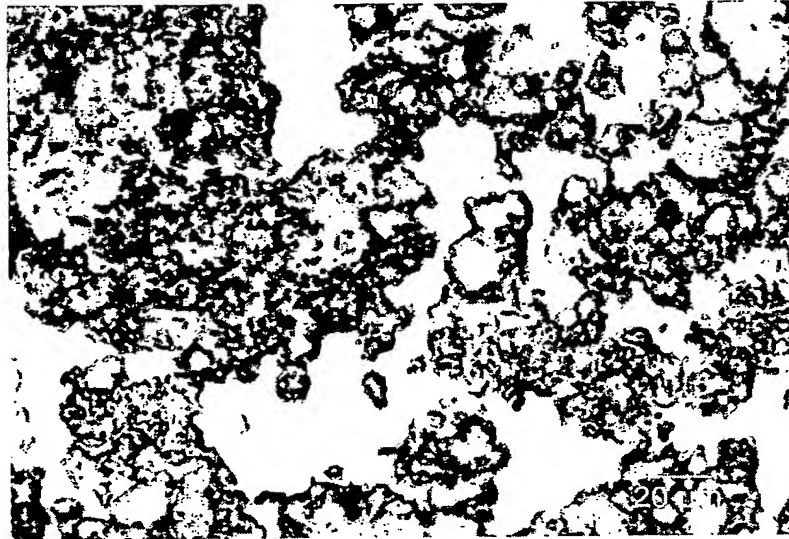


**Fig. 9**

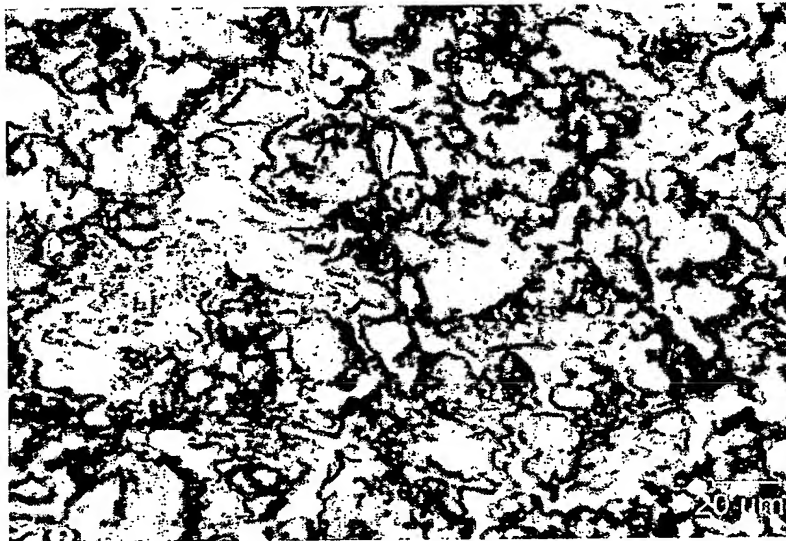
**Fig. 10****Fig. 11**



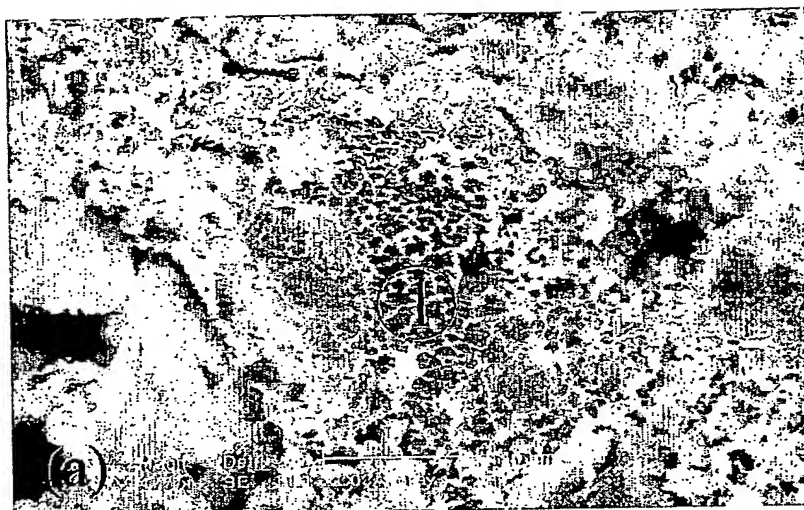
**Fig. 12****Fig. 13**



**Fig. 14**



**Fig. 15**



**Fig 16**

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**